

13 February 2023

Dear Members of the Health and Government Operations Committee,

Thank you for allowing me the opportunity to testify against House Bill 165. I am James Crabtree, a Maryland resident and a volunteer for Save Standard Time, a nonprofit organization that works to preserve and extend the observation of longitudinally correct Standard Time.

On the darkest days of the year, the temptation of more time to spend in the sun can be challenging to resist. In 1973, as the United States faced an energy crisis, federal lawmakers were enticed by the promise of brighter evenings and passed the same policy of permanent Daylight Saving Time that Maryland is now considering.<sup>1</sup> Then, the first Monday of 1974 came, and the sun rose at 8:25 a.m. in Annapolis. Jet blackness, as one mother described the scene at her daughter's bus stop, engulfed the nation until long after morning commuters had departed for work or school.<sup>2</sup> While Standard Time was not due to return until October 1975, the failed experiment was ended one year early to spare citizens a second consecutive winter of morning misery.<sup>3</sup>

Not only does permanent Daylight Saving Time have a history of extreme unpopularity, but scientists warn that exposure to excess evening sunlight and insufficient morning sunlight chronically worsens health, public safety, and the economy. Similarly, experts advise that humans operate ideally when the center of daylight hours roughly corresponds with civil noon, a phenomenon that occurs only when clocks are set to Standard Time. Introducing one hour of misalignment between solar time and circadian time perpetually deprives sleep, which explains all of the negative trends that are associated with Daylight Saving Time.<sup>4</sup>

While all residents of Maryland would suffer from the ramifications of extending Daylight Saving Time through the winter, I often hear this issue discussed in the specific context of school start times. The academic day at most middle schools and high schools in Maryland already begins before the earliest time of 8:30 a.m. recommended by tens of organizations dedicated to pediatric health, forcing students to battle their own biology to arrive at their morning classes on time.<sup>5,6</sup> Daylight Saving Time shifts school start times one additional hour earlier relative to the time of sunrise, negating all efforts to give students a healthy amount of morning sunlight before school. As a current high school student, the prospect of first seeing the sun on January mornings halfway through my first class of the day instead of during my drive to school does not particularly appeal to me.

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<sup>1</sup> Ripley, Anthony. "Senate Votes Return to Standard Time For Four Months and Sends Bill to Ford." [\*The New York Times\*](#), 1 October 1974. Accessed 13 February 2023.

<sup>2</sup> Beaujon, Andrew. "The US Tried Permanent Daylight Saving Time in the '70s. People Hated It." [\*Washingtonian\*](#), 15 March 2022. Accessed 13 February 2023.

<sup>3</sup> Ripley, Anthony. "Senate Votes Return to Standard Time."

<sup>4</sup> Giuntella, Osea, and Fabrizio Mazzonna. "Sunset time and the economic effects of social jetlag: evidence from US time zone borders." [\*ScienceDirect\*](#), 18 January 2019. Accessed 13 February 2023.

<sup>5</sup> Start School Later. "2022-2023 Public School Hours in Maryland." [\*Start School Later Maryland\*](#), 10 August 2022. Accessed 13 February 2023.

<sup>6</sup> Start School Later. "Position Statements and Resolutions on Sleep and School Start Times." [\*Start School Later\*](#), 29 January 2023. Accessed 13 February 2023.

No adjustment of time can make winter feel like summer, though extending Daylight Saving Time can make winters far more dismal. I ask anyone who is interested in keeping time honest and healthful to oppose House Bill 165, which seeks to redefine midnight as one hour before the middle of the night at the expense of quality of life and life itself.

Thank you,

James Crabtree

| <b>Misconception</b><br>Daylight Saving Time ... | <b>Fact</b>  |
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| creates additional sunlight.                     | The amount of sunlight on any day depends solely on a location's distance from the equator and the time of the year. Daylight Saving Time replaces one hour of morning light with one hour of evening light.   |
| improves physical health.                        | Daylight Saving Time elevates one's risks for obesity, diabetes, cardiovascular diseases, and breast cancer by increasing social jet lag. <sup>7</sup>   |
| improves mental health.                          | Cases of seasonal affective disorder rise in November due to shorter overall daylight hours and the acute shock that accompanies gaining one hour. Early morning light, which Daylight Saving Time curtails, most effectively mitigates mood disorders. <sup>8</sup> |
| boosts the economy.                              | Chronic circadian misalignment caused by late sunrises and late sunsets costs billions of dollars per year in health-care expenses and lost productivity. <sup>9</sup>   |
| reduces crime.                                   | Crime rates peak from March through October, during the season of Daylight Saving Time. This trend is far less discernible in states that observe permanent Standard Time. <sup>10</sup>   |
| saves energy.                                    | Most modern studies find that the effect of Daylight Saving Time on overall energy consumption is not statistically significant, and some research correlates brighter evenings and darker mornings with a slight increase in demand for energy. <sup>11</sup>       |
| makes driving safer.                             | Not only do traffic accidents spike in the week following the transition to Daylight Saving Time, but later daylight hours render drivers more susceptible to drowsy driving, the largest identifiable and preventable cause of accidents. <sup>12, 13</sup>         |

<sup>7</sup> Giuntella, Osea, and Fabrizio Mazzonna. "Sunset time and the economic effects of social jetlag."

<sup>8</sup> Roenneberg, Till, et al. "Daylight Saving Time and Artificial Time Zones – A Battle Between Biological and Social Times." *Frontiers*, 9 July 2019. Accessed 13 February 2023.

<sup>9</sup> Giuntella, Osea, and Fabrizio Mazzonna. "Sunset time and the economic effects of social jetlag."

<sup>10</sup> Maciag, Mike. "Monthly Crime Data For Cities, Local Law Enforcement Agencies." *Governing*, 28 October 2014. Accessed 13 February 2023.

<sup>11</sup> Choi, Charles. "Does Daylight Saving Time Conserve Energy?" *Scientific American*, 1 March 2009. Accessed 13 February 2023.

<sup>12</sup> Fritz, Josef, et al. "A Chronobiological Evaluation of the Acute Effects of Daylight Saving Time on Traffic Accident Risk." *PubMed*, 24 February 2020. Accessed 13 February 2023.

<sup>13</sup> Akerstedt. "Consensus statement: fatigue and accidents in transport operations." *PubMed*, December 2000. Accessed 13 February 2023.

is similar to flying to another time zone.

When traveling long distances east or west, the time between sunrise on one day and sunrise on the following day is significantly different from 24 hours. Clocks are adjusted to compensate for this discrepancy. Daylight Saving Time is the practice of living by a time zone that is east of one's physical location.



These photos were captured by James Crabtree on 10 December 2022 and 4 February 2023 in West River, Maryland. While Daylight Saving Time is not necessary to maintain reasonable sunset times, mornings from November through February would be extraordinarily dark without Standard Time.

A Year in Maryland on Permanent Daylight Saving Time

| Date  | Oakland<br>(western Maryland) |           | Annapolis |           | Ocean City<br>(eastern Maryland) |           |
|-------|-------------------------------|-----------|-----------|-----------|----------------------------------|-----------|
|       | Sunrise                       | Sunset    | Sunrise   | Sunset    | Sunrise                          | Sunset    |
| 1 Jan | 8:38 a.m.                     | 6:05 p.m. | 8:25 a.m. | 5:55 p.m. | 8:18 a.m.                        | 5:51 p.m. |
| 1 Feb | 8:25 a.m.                     | 6:39 p.m. | 8:13 a.m. | 6:28 p.m. | 8:06 a.m.                        | 6:23 p.m. |
| 1 Mar | 7:51 a.m.                     | 7:10 p.m. | 7:39 a.m. | 6:59 p.m. | 7:33 a.m.                        | 6:54 p.m. |
| 1 Apr | 7:02 a.m.                     | 7:42 p.m. | 6:51 a.m. | 7:30 p.m. | 6:46 a.m.                        | 7:24 p.m. |
| 1 May | 6:19 a.m.                     | 8:12 p.m. | 6:08 a.m. | 7:59 p.m. | 6:04 a.m.                        | 7:52 p.m. |
| 1 Jun | 5:53 a.m.                     | 8:39 p.m. | 5:42 a.m. | 8:26 p.m. | 5:39 a.m.                        | 8:18 p.m. |
| 1 Jul | 5:54 a.m.                     | 8:48 p.m. | 5:44 a.m. | 8:35 p.m. | 5:40 a.m.                        | 8:28 p.m. |
| 1 Aug | 6:17 a.m.                     | 8:29 p.m. | 6:06 a.m. | 8:17 p.m. | 6:02 a.m.                        | 8:10 p.m. |
| 1 Sep | 6:46 a.m.                     | 7:48 p.m. | 6:34 a.m. | 7:36 p.m. | 6:29 a.m.                        | 7:30 p.m. |
| 1 Oct | 7:13 a.m.                     | 7:00 p.m. | 7:01 a.m. | 6:48 p.m. | 6:56 a.m.                        | 6:43 p.m. |
| 1 Nov | 7:46 a.m.                     | 6:16 p.m. | 7:33 a.m. | 6:05 p.m. | 7:26 a.m.                        | 6:00 p.m. |
| 1 Dec | 8:19 a.m.                     | 5:55 p.m. | 8:06 a.m. | 5:44 p.m. | 7:58 a.m.                        | 5:40 p.m. |

A Year in Maryland on Permanent Standard Time

| Date  | Oakland<br>(western Maryland) |           | Annapolis |           | Ocean City<br>(eastern Maryland) |           |
|-------|-------------------------------|-----------|-----------|-----------|----------------------------------|-----------|
|       | Sunrise                       | Sunset    | Sunrise   | Sunset    | Sunrise                          | Sunset    |
| 1 Jan | 7:38 a.m.                     | 5:05 p.m. | 7:25 a.m. | 4:55 p.m. | 7:18 a.m.                        | 4:51 p.m. |
| 1 Feb | 7:25 a.m.                     | 5:39 p.m. | 7:13 a.m. | 5:28 p.m. | 7:06 a.m.                        | 5:23 p.m. |
| 1 Mar | 6:51 a.m.                     | 6:10 p.m. | 6:39 a.m. | 5:59 p.m. | 6:33 a.m.                        | 5:54 p.m. |
| 1 Apr | 6:02 a.m.                     | 6:42 p.m. | 5:51 a.m. | 6:30 p.m. | 5:46 a.m.                        | 6:24 p.m. |
| 1 May | 5:19 a.m.                     | 7:12 p.m. | 5:08 a.m. | 6:59 p.m. | 5:04 a.m.                        | 6:52 p.m. |
| 1 Jun | 4:53 a.m.                     | 7:39 p.m. | 4:42 a.m. | 7:26 p.m. | 4:39 a.m.                        | 7:18 p.m. |
| 1 Jul | 4:54 a.m.                     | 7:48 p.m. | 4:44 a.m. | 7:35 p.m. | 4:40 a.m.                        | 7:28 p.m. |
| 1 Aug | 5:17 a.m.                     | 7:29 p.m. | 5:06 a.m. | 7:17 p.m. | 5:02 a.m.                        | 7:10 p.m. |
| 1 Sep | 5:46 a.m.                     | 6:48 p.m. | 5:34 a.m. | 6:36 p.m. | 5:29 a.m.                        | 6:30 p.m. |
| 1 Oct | 6:13 a.m.                     | 6:00 p.m. | 6:01 a.m. | 5:48 p.m. | 5:56 a.m.                        | 5:43 p.m. |
| 1 Nov | 6:46 a.m.                     | 5:16 p.m. | 6:33 a.m. | 5:05 p.m. | 6:26 a.m.                        | 5:00 p.m. |
| 1 Dec | 7:19 a.m.                     | 4:55 p.m. | 7:06 a.m. | 4:44 p.m. | 6:58 a.m.                        | 4:40 p.m. |

A Year in Maryland on Current System of Clock Changes

| Date   | Oakland<br>(western Maryland) |           | Annapolis |           | Ocean City<br>(eastern Maryland) |           |
|--------|-------------------------------|-----------|-----------|-----------|----------------------------------|-----------|
|        | Sunrise                       | Sunset    | Sunrise   | Sunset    | Sunrise                          | Sunset    |
| 1 Jan  | 7:38 a.m.                     | 5:05 p.m. | 7:25 a.m. | 4:55 p.m. | 7:18 a.m.                        | 4:51 p.m. |
| 1 Feb  | 7:25 a.m.                     | 5:39 p.m. | 7:13 a.m. | 5:28 p.m. | 7:06 a.m.                        | 5:23 p.m. |
| 1 Mar  | 6:51 a.m.                     | 6:10 p.m. | 6:39 a.m. | 5:59 p.m. | 6:33 a.m.                        | 5:54 p.m. |
| 1 Apr  | 7:02 a.m.                     | 7:42 p.m. | 6:51 a.m. | 7:30 p.m. | 6:46 a.m.                        | 7:24 p.m. |
| 1 May  | 6:19 a.m.                     | 8:12 p.m. | 6:08 a.m. | 7:59 p.m. | 6:04 a.m.                        | 7:52 p.m. |
| 1 Jun  | 5:53 a.m.                     | 8:39 p.m. | 5:42 a.m. | 8:26 p.m. | 5:39 a.m.                        | 8:18 p.m. |
| 1 Jul  | 5:54 a.m.                     | 8:48 p.m. | 5:44 a.m. | 8:35 p.m. | 5:40 a.m.                        | 8:28 p.m. |
| 1 Aug  | 6:17 a.m.                     | 8:29 p.m. | 6:06 a.m. | 8:17 p.m. | 6:02 a.m.                        | 8:10 p.m. |
| 1 Sep  | 6:46 a.m.                     | 7:48 p.m. | 6:34 a.m. | 7:36 p.m. | 6:29 a.m.                        | 7:30 p.m. |
| 1 Oct  | 7:13 a.m.                     | 7:00 p.m. | 7:01 a.m. | 6:48 p.m. | 6:56 a.m.                        | 6:43 p.m. |
| 1 Nov* | 7:46 a.m.                     | 6:16 p.m. | 7:33 a.m. | 6:05 p.m. | 7:26 a.m.                        | 6:00 p.m. |
| 1 Dec  | 7:19 a.m.                     | 4:55 p.m. | 7:06 a.m. | 4:44 p.m. | 6:58 a.m.                        | 4:40 p.m. |

\* In years when 1 November is a Sunday, the times of sunrise and sunset for this date are one hour earlier than listed because of the relatively early switch from Daylight Saving Time to Standard Time.

## Sources

- Akerstedt. “Consensus statement: fatigue and accidents in transport operations.” *PubMed*, December 2000, <https://pubmed.ncbi.nlm.nih.gov/11123524/>. Accessed 13 February 2023.
- Beaujon, Andrew. “The US Tried Permanent Daylight Saving Time in the ’70s. People Hated It.” *Washingtonian*, 15 March 2022, <https://www.washingtonian.com/2022/03/15/the-us-tried-permanent-daylight-saving-time-in-the-70s-people-hated-it/>. Accessed 13 February 2023.
- Choi, Charles. “Does Daylight Saving Time Conserve Energy?” *Scientific American*, 1 March 2009, <https://www.scientificamerican.com/article/does-daylight-saving-times-save-energy/>. Accessed 13 February 2023.
- Fritz, Josef, et al. “A Chronobiological Evaluation of the Acute Effects of Daylight Saving Time on Traffic Accident Risk.” *PubMed*, 24 February 2020, <https://pubmed.ncbi.nlm.nih.gov/32008905/>. Accessed 13 February 2023.
- Giuntella, Osea, and Fabrizio Mazzonna. “Sunset time and the economic effects of social jetlag: evidence from US time zone borders.” *ScienceDirect*, 18 January 2019, <https://doi.org/10.1016/j.jhealeco.2019.03.007>. Accessed 13 February 2023.
- Maciag, Mike. “Monthly Crime Data For Cities, Local Law Enforcement Agencies.” *Governing*, 28 October 2014, <https://www.governing.com/archive/crime-data-statistics-for-cities-local-law-enforcement-by-month.html>. Accessed 13 February 2023.
- Ripley, Anthony. “Senate Votes Return to Standard Time For Four Months and Sends Bill to Ford.” *The New York Times*, 1 October 1974, <https://www.nytimes.com/1974/10/01/archives/senate-votes-return-to-standard-time-for-four-months-and-sends-bill.html>. Accessed 13 February 2023.
- Roenneberg, Till, et al. “Daylight Saving Time and Artificial Time Zones – A Battle Between Biological and Social Times.” *Frontiers*, 9 July 2019, <https://www.frontiersin.org/articles/10.3389/fphys.2019.00944/full>. Accessed 13 February 2023.
- Start School Later. “Position Statements and Resolutions on Sleep and School Start Times.” *Start School Later*, 29 January 2023, <https://www.startschoollater.net/position-statements.html>. Accessed 13 February 2023.
- Start School Later. “2022-2023 Public School Hours in Maryland.” *Start School Later Maryland*, 10 August 2022, <https://www.startschoollater.net/uploads/9/7/9/6/9796500/2022-2023-maryland-school-hours-01212023.pdf>. Accessed 13 February 2023.